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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,611	11/21/2003	Rahul Srivastava	BEAS-01340US3	3133

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FLIESLER MEYER, LLP
FOUR EMBARCADERO CENTER
SUITE 400
SAN FRANCISCO, CA 94111

EXAMINER

NGUYEN, QUANG N

ART UNIT	PAPER NUMBER
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2141

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,611

Applicant(s)

SRIVASTAVA ET AL.

Examiner

Quang N Nguyen

Art Unit

2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. This Office Action is in response to the Application SN 10/719,611 filed on 11/21/2003. Claims 1-19 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 4-11 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Nageswaran (US 5,991,792).**

4. As to claim 1, Nageswaran teaches a system and method for dynamically managing a thread pool of reusable threads in a computer system, comprising:

triggering a resource pool shrink check (*the thread manager 132 periodically checking the ratio 146 of the total number of threads to the number of method requests being processed*) (Nageswaran, C3: L29-46);

determining that pool shrinking is necessary (*when the server thread manager 132 determines that the thread use ratio is high, then the server thread manager commences the process of reducing number of threads in the thread pool 136*) (Nageswaran, C3: L8-14);

reducing resources in a unavailable deque (*threads 138 that are idle are prime candidates to be released and thread manager 132 would identify these threads and mark their state as "Being Removed"*) (Nageswaran, C3: L54-67 and C4: L1-18); and

reducing resources in an available deque (*threads 138 that are not dedicated for any particular transaction are prime candidates to be released and thread manager 132 would identify these threads and mark their state as "Being Removed"*) (Nageswaran, C3: L54-67 and C4: L1-18).

5. As to claim 4, Nageswaran teaches the method of claim 1, further includes detecting resources contained in an available or an unavailable deque (*the thread manager 132 maintains an idle thread queue 140 that contains a thread ID for all idle reusable threads 138 and a dedication table 141 storing a dedicated thread ID 142 with a particular client or transaction ID 143*) (Nageswaran, C2: L42-47).

6. As to claim 5, Nageswaran teaches the method of claim 1, further includes determining the number of resources in the resource pool (*a total number Y of threads 138*) is greater than a maximum resource pool threshold value (*a threshold number X of threads 138*) (Nageswaran, C3:L63 – C4:L18).

7. As to claim 6, Nageswaran teaches the method of claim 5, wherein the maximum resource pool threshold value is set by a programmable attribute (*the thread manager 132 has identified that the size is to be shrunk to a configured, i.e., predefined, threshold number X of threads 138*) (Nageswaran, C3:L63 – C4:L18).

8. As to claims 7-10, Nageswaran teaches the method of claim 1, further includes reducing resources in an available (or unavailable) deque to coincident with a maximum available (or unavailable) resources threshold (*ideally, the shrinkage should result in the reduction of threads down to a configured minimum number of threads 138 in the pool 136, if and only if the number of requests is below the number of minimum threads in the thread pool 136*), wherein resources in the available (or unavailable) deque are destroyed (*threads that are identified and marked for "Being Removed" are deleted/removed*) (Nageswaran, C4: L1-40).

9. As to claim 11, Nageswaran teaches a method for performing resource pool maintenance for an application server, comprising:

triggering a test for pool resources (*whenever a new method request is being processed or a method request is completed and a thread is returned to the thread pool, the thread manager 132 checks whether thread pool reduction is needed*) (Nageswaran, C3: L30-46);

performing a test on pool resources; and

refreshing pool resources based on the pool resources testing (*when the server thread manager 132 determines that the number of reusable threads 138 in the thread pool 136 to the number of requests being processed or the thread use ratio 146 is high, then commences the thread pool reduction operation*) (Nageswaran, C3: L8-14).

10. As to claim 13, Nageswaran teaches the method of claim 11, wherein said performing a test on pool resources includes determining if pool resources are functioning properly, wherein the resources are refreshed if they are not functioning properly (*threads, that are not dedicated for any particular transaction and are idle, are identified and marked as "Being Removed" to be released*) (Nageswaran, C4: L6-9).

11. Claims 14-15 are corresponding method claims of method claims 1 and 4; therefore, they are rejected under the same rationale.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 2-3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nageswaran, in view of June et al. (US 2004/0045008 A1), herein after referred as June.

14. As to claims 2-3, Nageswaran teaches the method of claim 1, but does not explicitly teach determining that a period of time set by a programmable attribute has expired and performing the resource pool shrink check at the expiration of the period of time.

In a related art, June teaches a connector architecture implementation pre-configures and manages the growth and reduction of a connection pool, wherein the connector determines if the managed connection usage decrease has existed for a specified period of time (*i.e., a period of time has expired*), which maybe configured as a parameter in the shrink-period minutes element located in an XML formatted descriptor file of the connector architecture implementation, then the size of the connection pool is decreased in step 540 (June, paragraph [0032]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Nageswaran and June to determine that a period of time set by a programmable attribute has expired and perform the resource pool shrink check at the expiration of the period of time since such methods were conventionally employed in the art to provide the system (administrator) a mechanism to monitor and make changes to the resource/thread pool within the application server dynamically as needed.

15. Claim 12 is a corresponding method claim of method claim 2; therefore, it is rejected under the same rationale.

16. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nageswaran, in view of in view of Sharma et al. (US 6,182,109), herein after referred as Sharma.

17 As to claims 16-17, Nageswaran teaches the method of claim 14, but does not explicitly teach scheduling resource creation for each resource in the unavailable/reserved queue.

In a related art, Sharma teaches a system and method for dynamically managing a pool of execution units (*threads*) in a server system, wherein the server management thread is wakened either by a timer (*i.e., scheduling resource creation by a scheduler*)

or by signals for thread allocation (*creation*) when the number of unused threads in the thread pool falls below some lower limit (Sharma, C25: L27-31).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Nageswaran and Sharma to include scheduling resource creation for each resource in the unavailable/reserved queue since such methods were conventionally employed in the art to allow the system to create/allocate resource/thread to the server pool at the timer interval or at when a connection request is received and no available managed threads/connections exist, i.e., when actually needed, in order to improve the system performance by not affecting the server's ability to service requests.

18. As to claim 18, Nageswaran-Sharma teaches at server initialization, a MinThreads number of threads are created and inserted into the thread pool. Also, in this step, UnusedThreads & TotalThreads is set to MinThreads and ReservedThreads is set to 0 (zero) (Sharma, C23: L55-59).

19. As to claim 19, Nageswaran-Sharma teaches the method of claim 18, further comprises determining that a period of time has expired and generating a resource at the expiration of the period of time (*the threads will only be added immediately when UnusedThreads falls below the MinThreads limit, otherwise, threads will be delayed until the next timer interval, i.e., the expiration of the period of time*) (Sharma, C25: L39-43).


20. Further references of interest are cited on Form PTO-892, which is an attachment to this office action.

21. A shortened statutory period for reply to this action is set to expire THREE (3) months from the mailing date of this communication. See 37 CFR 1.134.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Nguyen whose telephone number is (571) 272-3886.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's SPE, Rupal Dharia, can be reached at (571) 272-3880. The fax phone number for the organization is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


RUPAL DHARIA
SUPERVISORY PATENT EXAMINER